

**Notice of Allowability**

Application No.

09/448,223

Examiner

Todd Ingberg

Applicant(s)

DARDINSKI ET AL.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/14/2005.
2. ☒ The allowed claim(s) is/are 44-58,102-104.
3. ☒ The drawings filed on 23 November 1999 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 1/31/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 6/13/05
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

PD

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with David E. Powsner on June 13, 2005.

The application has been amended as follows:

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- 1-43. Canceled
44. (Currently Amended) Apparatus for configuring a process control system, the apparatus executing on a digital data processor and comprising:  
  
one or more objects, each representing an entity and each being associated with an object type,  
  
each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,  
  
at least one object, hereinafter referred to as a first connection object, [(“first connection object”)] identifying permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,  
  
at least one object, hereinafter referred to as a second connection object, [(“second connection” object)] identifying permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

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the apparatus validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the first connection object, and

the apparatus establishing a relationship between one or more parameters of one or more objects for which a potential relationship has been validated, the relationship between parameters being established by comparing the types of those parameters with the types identified by the second connection object.

45. (Original) Apparatus according to claim 44, wherein the apparatus establishes validates a potential relationship between objects selected by a user.

46. (Original) Apparatus according to claim 44, wherein

the first connection object specifies a role that one or more object types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship, and

the second connection object specifies a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.

47. (Original) Apparatus according to claim 44, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.

48. (Original) Apparatus according to claim 47, wherein the first connection object specifies a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.

49. (Original) Apparatus according to claim 48, wherein the first connection object identifies, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.

50. (Currently Amended) Apparatus according to claim 48, wherein

the first connection object identifies, for an object that may serve in a child role, any of a weight and other quantitative attribute, hereinafter referred collectively referred to a weight, [(collectively, “ weight ”)] associated with that object, and

the first connection object identifies, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role:

51. (Original) Apparatus according to claim 44, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.
52. (Original) Apparatus according to claim 51, wherein the second connection object specifies a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.
53. (Original) Apparatus according to claim 52, wherein the second connection object identifies, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.
54. (Original) Apparatus according to claim 52, wherein the second connection object identifies, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.
55. (Original) Apparatus according to claim 44, wherein

the first connection object identifying validated relationships established between objects, and

the second connection object identifying validated relationships established between parameters.

56. (Original) Apparatus according to claim 44, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) the apparatus for configuring the control system.
57. (Original) Apparatus according to claim 56, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.
58. (Original) Apparatus according to claim 57, wherein each parameter has one or more attributes, and wherein the attributes of a parameter define any of the following with the respect to the characteristic to which the parameter pertains: name, grouping, display label, data type, behavior, help information, edit type, data value range, data value, formula definition, and display format.
- 59-101. Canceled
102. (Currently Amended) A method for configuring a control system, the method comprising executing on a digital data processor the steps of:
- representing one or more entities with objects, each being associated with an object type,
- each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,
- identifying, with at least one object, hereinafter referred to as first connection object,
- [ (“first connection object”) ] permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,
- identifying, with at least one, hereinafter referred to as a second connection object, [ (“second connection” object) ] permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the first connection object, and

establishing a relationship between one or more parameters of one or more objects for which a potential relationship has been validated, the relationship between parameters being established by comparing the types of those parameters with the types identified by the second connection object.

103. (Original) A method according to claim 102, comprising the step of establishing validates a potential relationship between objects selected by a user.

104. (Original) A method according to claim 102, comprising the steps of

specifying, with the first connection object, a role that one or more object types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship, and

specifying, with the second connection object, a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.

105. (Original) A method according to claim 102, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.

106. (Original) A method according to claim 105, comprising the step of specifying, with the first connection object, a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.

107. (Original) A method according to claim 106, comprising the step of identifying, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.

108. (Currently Amended) A method according to claim 106, wherein

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identifying, for an object that may serve in a child role, any of a weight and other quantitative, hereinafter referred collectively referred to a weight, [(collectively, “ weight ”)] associated with that object, and

identifying, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role.

109. (Original) A method according to claim 102, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.
110. (Original) A method according to claim 109, comprising the step of specifying, with the second connection object, a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.
111. (Original) A method according to claim 110, comprising the step of identifying, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.
112. (Original) A method according to claim 110, comprising the step of identifying, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.
113. (Original) A method according to claim 102, wherein  
  
identifying, with the first connection object, validated relationships established between objects, and  
  
identifying, with the second connection object, validated relationships established between parameters.
114. (Original) A method according to claim 102, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) an apparatus for configuring the control system.

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115. (Original) A method according to claim 114, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.
116. (Original) A method according to claim 115, wherein each parameter has one or more attributes, and wherein the attributes of a parameter define any of the following with the respect to the characteristic to which the parameter pertains: name, grouping, display label, data type, behavior, help information, edit type, data value range, data value, formula definition, and display format.

117-134. Canceled

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1-43. Canceled

44. (Currently Amended) Apparatus for configuring a process control system, the apparatus executing on a digital data processor and comprising:

one or more objects, each representing an entity and each being associated with an object type,

each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

at least one object, hereinafter referred to as a first connection object, identifying permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship, at least one object, hereinafter referred to as a second connection object, identifying permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,



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the apparatus validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the first connection object, and

the apparatus establishing a relationship between one or more parameters of one or more objects for which a potential relationship has been validated, the relationship between parameters being established by comparing the types of those parameters with the types identified by the second connection object.

45. (Original) Apparatus according to claim 44, wherein the apparatus establishes validates a potential relationship between objects selected by a user.

46. (Original) Apparatus according to claim 44, wherein

the first connection object specifies a role that one or more object types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship, and

the second connection object specifies a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.

47. (Original) Apparatus according to claim 44, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.

48. (Original) Apparatus according to claim 47, wherein the first connection object specifies a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.

49. (Original) Apparatus according to claim 48, wherein the first connection object identifies, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.

50. (Currently Amended) Apparatus according to claim 48, wherein

the first connection object identifies, for an object that may serve in a child role, any of a weight and other quantitative attribute, hereinafter referred collectively referred to a weight, associated with that object, and

the first connection object identifies, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role.

51. (Original) Apparatus according to claim 44, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.
52. (Original) Apparatus according to claim 51, wherein the second connection object specifies a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.
53. (Original) Apparatus according to claim 52, wherein the second connection object identifies, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.
54. (Original) Apparatus according to claim 52, wherein the second connection object identifies, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.
55. (Original) Apparatus according to claim 44, wherein the first connection object identifying validated relationships established between objects, and the second connection object identifying validated relationships established between parameters.
56. (Original) Apparatus according to claim 44, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) the apparatus for configuring the control system.

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57. (Original) Apparatus according to claim 56, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.

58. (Original) Apparatus according to claim 57, wherein each parameter has one or more attributes, and wherein the attributes of a parameter define any of the following with the respect to the characteristic to which the parameter pertains: name, grouping, display label, data type, behavior, help information, edit type, data value range, data value, formula definition, and display format.

59-101. Canceled

102. (Currently Amended) A method for configuring a control system, the method comprising executing on a digital data processor the steps of:

representing one or more entities with objects, each being associated with an object type,

each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type, identifying, with at least one object, hereinafter referred to as first connection object, permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

identifying, with at least one, hereinafter referred to as a second connection object, permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the first connection object, and

establishing a relationship between one or more parameters of one or more objects for which a potential relationship has been validated, the relationship between parameters

- being established by comparing the types of those parameters with the types identified by the second connection object.
103. (Original) A method according to claim 102, comprising the step of establishing validates a potential relationship between objects selected by a user.
104. (Original) A method according to claim 102, comprising the steps of
- specifying, with the first connection object, a role that one or more object types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship, and
- specifying, with the second connection object, a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.
105. (Original) A method according to claim 102, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.
106. (Original) A method according to claim 105, comprising the step of specifying, with the first connection object, a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.
107. (Original) A method according to claim 106, comprising the step of identifying, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.
108. (Currently Amended) A method according to claim 106, wherein
- identifying, for an object that may serve in a child role, any of a weight and other quantitative; hereinafter referred collectively referred to a weight, associated with that object, and identifying, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role.

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109. (Original) A method according to claim 102, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.
110. (Original) A method according to claim 109, comprising the step of specifying, with the second connection object, a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.
111. (Original) A method according to claim 110, comprising the step of identifying, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.
112. (Original) A method according to claim 110, comprising the step of identifying, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.
113. (Original) A method according to claim 102, wherein  
  
identifying, with the first connection object, validated relationships established between objects, and  
  
identifying, with the second connection object, validated relationships established between parameters.
114. (Original) A method according to claim 102, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) an apparatus for configuring the control system.
115. (Original) A method according to claim 114, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.
116. (Original) A method according to claim 115, wherein each parameter has one or more attributes, and wherein the attributes of a parameter define any of the following with the respect to the characteristic to which the parameter pertains: name, grouping, display

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label, data type, behavior, help information, edit type, data value range, data value, formula definition, and display format.

117-134. Canceled

## REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance:

The independent claims are represented by claim 1 as shown below:

44. (Currently Amended) Apparatus for configuring a process control system, the apparatus executing on a digital data processor and comprising:

one or more objects, each representing an entity and each being associated with an object type,

each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

at least one object, hereinafter referred to as a first connection object, identifying permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship, at least one object, hereinafter referred to as a second connection object, identifying permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

the apparatus validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the first connection object, and

the apparatus establishing a relationship between one or more parameters of one or more objects for which a potential relationship has been validated, the relationship between parameters being established by comparing the types of those parameters with the types identified by the second connection object.

The prior art of record when taken singularly or in combination fails to teach the present limitations. Particularly the source/sink operation of validating the connections.

Co-pending application 09/572,343 also employs the source/sink means of validation but is directed toward imposing a security model and is not a candidate for double patenting.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### **Correspondence Information**

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Todd Ingberg whose telephone number is (571) 272-3723. The examiner can normally be reached on during the work week..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

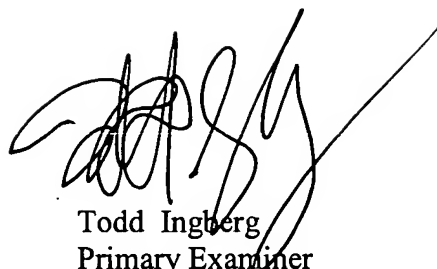
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Todd Ingherg  
Primary Examiner  
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